

Magnetism and Electricity:

- Magnetism:

- A magnet is an object that produces a magnetic field.
- Magnets that are natural or man-made.

1
H

Ferromagnetic
 Antiferromagnetic

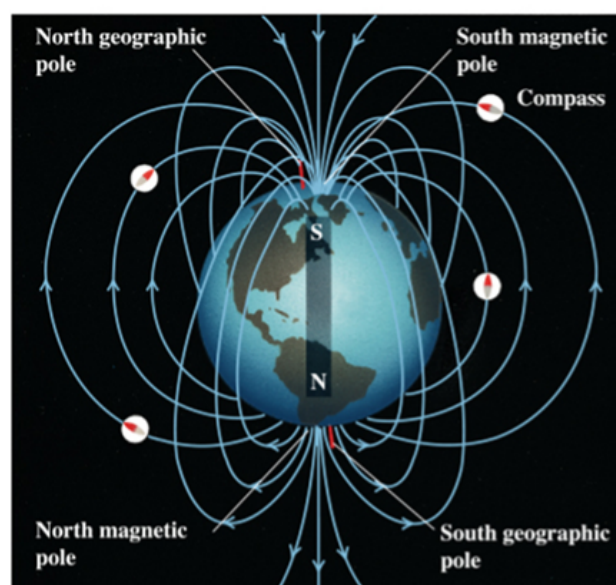
2
He

Paramagnetic
 Diamagnetic

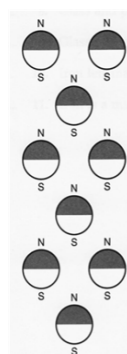
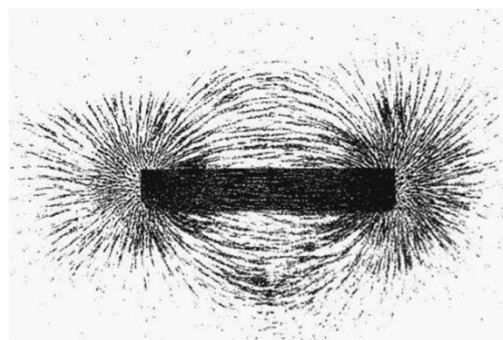
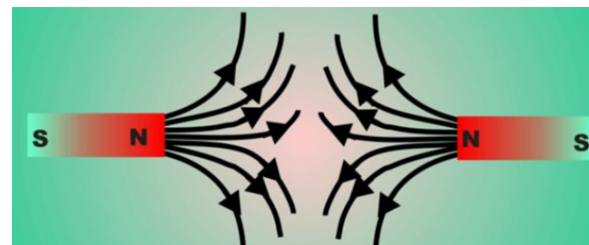
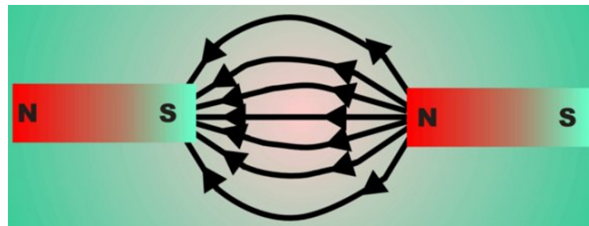
3 Li	4 Be																	5 B	6 C	7 N	8 O	9 F	10 Ne			
11 Na	12 Mg																	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar			
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr									
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe									
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn									
87 Fr	88 Ra	89 Ac																101 Mendelevium	102 Nobelium	103 Lawrencium	104 Rutherfordium	105 Dubnium	106 Seaborgium	107 Bohrium	108 Hassium	109 Meitnerium

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
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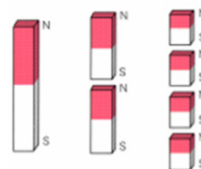
- Naturally Magnetic Elements:
- Nickel
 - Iron
 - Cobalt
 - Gadolinium (Gd)



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• When atoms are aligned, a strong magnetic field is formed.

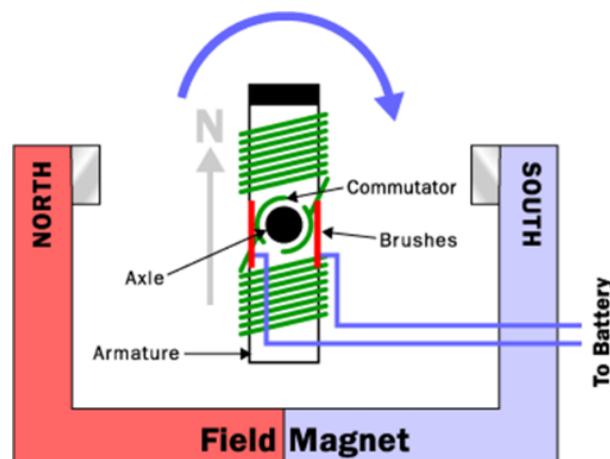
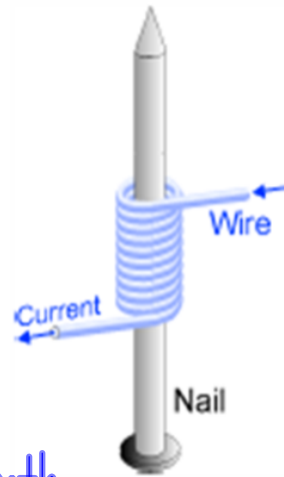


* Magnets ALWAYS exist as dipoles (Always must have a north and south.)

- Magnetic Properties:
 - All magnets have 2 poles (dipole).
 - Monopoles do NOT exist in magnets (as of now...), but they do exist in electricity.
 - Like poles repel, opposite poles attract.
- Permanent Magnets:
 - Substances that are magnetic all the time.
 - Use permanent magnets to change other substances into magnets.
- Magnetic Fields:
 - Analogous to electric fields
 - Causes interactions between magnets
 - Arrows point from north to south
 - Lines closer together means a stronger field

• Electromagnets:

- Use a wire to create a magnet → put loops in the wire in the wire
- This works because a moving charge creates both an electric and magnetic field.
- Strength of electromagnet depends on...
 - Wire size
 - Number of loops → increase to increase field strength
 - Amount of current → higher the current the higher the field strength
 - Insert an iron core



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